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PATENT

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Jathan D. Edwards; Donald J. Kerfeld Confirmation No. 2139  
Serial No.: 10/790,965  
Filed: March 2, 2004 Customer No.: 30590  
Examiner: Dimple N. Bodawala  
Group Art Unit: 1791  
Docket No.: 53868US05  
Title: REVERSE OPTICAL MASTERING FOR DATA STORAGE DISK  
STAMPER

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## DECLARATION UNDER 37 C.F.R. 1.132

Commissioner for Patents  
Washington, D.C. 20231

I, Jathan D. Edwards, declare as follows:

1. I am named as an inventor in above-referenced US Patent Application Serial No. 10/790,965.
2. I was an employee of Imation Corporation and assigned rights to the above-referenced patent application to Imation Corporation.
3. I worked in the field of optical disk technology from 1985 to 2007 and I am well versed in the state of conventional optical disk technology in the time frame of 1987-1988.
4. I have been advised that the United States Patent and Trademark Office applied Suzuki (U.S. 4,947,384) in rejections of claims in the above-referenced patent application. I have reviewed the arguments advanced by the United States Patent and Trademark Office in the

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rejections of claims in the above-referenced patent application based on Suzuki, and I have reviewed Suzuki and its priority document JP 62-90081.

6. The Examiner has relied on a typographical error in Suzuki, and failed to demonstrate that Suzuki actually enables a track pitch of 1.6 microinch and groove dimensions of 0.8 microinch, which the Examiner relied upon to reject the track pitch and groove dimension features of claims in the above-referenced patent application. The Examiner's position is incorrect.

Suzuki and its priority document JP 62-90081 are in agreement with regard to all of the commonly available information, with the exception that JP 62-90081 expresses the track pitch as 1.6 micrometers and groove dimension of 0.8 micrometers. Track pitch of 1.6 micrometers and groove dimensions of 0.8 micrometers are consistent with conventional dimensions of the filing period of Suzuki, while 1.6 microinch track pitch and groove dimensions of 0.8 microinch are far smaller than any conventional optical recording processes were capable of at the priority date and filing date of Suzuki.

The relied upon passages of Suzuki merely describe the standard mastering processes of focused scanning laser beam exposure using single layer photoresist. This was conventional and commonly practiced for the 1.6 micrometer track pitch and 0.8 micrometer groove dimension described in priority JP 62-90081. Suzuki refers to the conventional nature of this background teaching frequently in the background section, and then describes the invention of Suzuki in the Summary and Detail Description sections. The description of Suzuki describes that "the spot diameter of the laser beam for read-out is ordinarily within the width of the land portion" (col.1, line 50-54) and also describes tracing singular land portions using said laser spot (col.1, lines 39,40) and laser beam actuated to trace out a singular land portion (col.1, line 45).

One of ordinary skill in the art would recognize that all of these descriptions are unattainable for track pitches that are much smaller than the focal spot size of the laser beam.

The current patent application, in contrast, describes the optical physics limitation of a focused laser spot size as depending on wavelength and lens numerical aperture, with limitations of 220 nm even for UV light (350nm wavelength) and highest Numerical Aperture (NA=0.92). Suzuki does not enable any 40nm laser spot size that would be required to attain track pitch

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dimensions of 1.6 microinch and groove dimension of 0.8 microinch. The mis-translated dimensions of 1.6 microinch track pitch and of 0.8 microinch groove dimensions are not enabled by Suzuki.

As further evidence that the teaching of Suzuki is descriptive of conventional track pitches at 1.6 micrometer and conventional groove dimensions of 0.8 micrometer (rather than microinches), I note that Suzuki describes the optical push-pull tracking method in col. 1, lines 60-65, as justification for the dimensions that are cited by the Examiner in the Office Action.

The push-pull method, as it is commonly called, relies on the optical diffraction of the incident focused laser light into  $\pm 1^{\text{st}}$  order diffraction beams, which interfere with the zero order reflected beam to create a trackable signal from a split tracking detector. If Suzuki actually contemplated a 40nm track pitch, then no optical diffraction would occur since the diffraction grating would be significantly less than the incident wavelength (hence resulting in no push-pull tracking signal). Furthermore, Suzuki's teaching does not enable any way to obtain an optical diffraction pattern from a pattern of sub-optically diffracting pitch (i.e. 40nm), but instead presumes conventional tracking means, which is consistent with the 1.6 micrometer pitch of priority document JP 62-90081.

In addition, Suzuki teaches a laser beam focused on a photoresist layer for the mastering step (see col. 2, line 4-6), but does not provide any enabling disclosure that describes how to provide a 40nm dimension laser spot size (which is actually below the limits of optical physics at  $\sim 220\text{nm}$ ).

In short, Suzuki describes conventional processes from the time frame of the filing of Suzuki (e.g., 1987-1988), and fails to address any of the challenges of translating 1.6 micrometer track pitches to 1.6 microinches (i.e., approximately 40nm) track pitches. On the contrary, Suzuki teaches conventional processes from the time frame of 1987-1988, consistent with the dimensions cited in priority document JP 62-90081. Suzuki simply fails to disclose any way to attain track pitches anywhere near 1.6 microinches, or groove dimensions anywhere near 0.8 microinch.

Suzuki is inadequate to enable a person of ordinary skill in the art to achieve the cited dimensions (in microinches), and the entire discussion of microinches in Suzuki is clearly a typographical translation error relative to the Japanese priority document of Suzuki. A person of

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ordinary skill would interpret such typographical translation errors in Suzuki as suggesting track pitches at 1.6 micrometers, not 1.6 microinches.

Furthermore, Suzuki simply fails to disclose any way to attain track pitches anywhere near 1.6 microinches, or groove dimensions anywhere near 0.8 microinch.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true. I further declare that these statements are being made with the knowledge that willful false statements are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that willful false statements may jeopardize the validity of the application or any patent issued thereon.

Date: 11/5/2008

Signed: 

Jathan D. Edwards